Square circular polarized dielectric resonator antenna with a rotated notch

Abstract :

A square dielectric resonator antenna is mounted on the edge of substrate, which is excited simply with a microstrip line. The DRA radiates from both upper and lower side and is optimized to have the maximum surface to volume ratio. For circular polarization, a 45 degree rotated square notch is drilled inside the DRA and the microstrip line is designed to be at the right side of the DRA. A circular magnetic current creates a dramatic low axial ratio for a wide matching rate. The proposed compact DRA antenna showed a good radiation characteristic with an impedance bandwidth of 5.9GHz between 3.9GHz and 9.8GHz and axial ratio of 1.25GHz between 3.9GHz and 5.15GHz and axial ratio of 900MHz between 7GHz and 7.9GHz. The results are numerically investigated with Microwave CST Studio software.